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Loss Circulation Prevention during Drilling Operation - Risk Analysis Approach and its Implications

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Article Preview

Abstract:

Drilling engineers and operators are stuck with challenges associated with loss circulation of drilling fluids in wellbores during drilling operation. At such times, a clear and careful decision is required in order to minimize cost or save resources that would have been lost in the bid to remedy the situation. This then informs the need to deploy reliable tools that will inform useful decisions as drawn from a thorough risk-analysis coined from the information gathered from the formation characteristics and operating pressure. In this study, a real-time statistic based approach was adopted in carrying out risk-evaluation of loss circulation events in a wellbore. Based on the expected opportunity loss analysis, it is often non-negotiable to consider other options when the analytical solution suggests that the well should be “abandoned”. For the decision tree, at the decision node, D1, the expected loss of the seal off zone option is \$161.25, the expected loss of the drill ahead option is \$19.2 and the expected loss of the abandon option is \$13.2. Since the expected loss of the abandon option is less than the expected value of both the seal off and the drill ahead option, it is recommended to abandon the well. Furthermore, the risk analysis proved to be a veritable tool considering the cost implications of other options; and can also serve as basis for automated decision-making.

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